

REMARKS

Claims 1-18 remain present in this application.

Claims 1-3 stand rejected under 35 USC 103 as being unpatentable over BUTTERWORTH et al., U.S. Patent 6,498,632, in view of DULTZ et al., U.S. Patent 6,331,910, and further in view of BRYARS, U.S. Patent 5,986,815 and TAKANASHI et al., U.S. Patent 5,502,490. This rejection is respectfully traversed.

Claims 4-18 stand rejected under 35 USC 103 as being unpatentable over BUTTERWORTH et al. in view of DULTZ et al., and further in view of BRYARS, ARITAKE et al., U.S. Patent 6,478,429, and TAKANASHI et al. This rejection is respectfully traversed.

**Rejection under 35 USC 103 - Claims 1-3**

Claim 1 recites:

A fast time-sequential color-separating device including a plurality of modules sequentially connected to each other, in which each module includes a dichroic mirror, which can pass a certain wavelength range of light having a first polarization and reflect the other wavelength range of light having a first polarization, a polarizing beam-splitter for said certain wavelength range and a liquid crystal panel that can change the polarization of a light reflected by the liquid crystal panel if an external electric field is applied thereto, wherein the light having a first polarization reflected by the liquid crystal panel is reflected along the incident optical path while no external electric field is applied to the liquid crystal, the light

having a first polarization reflected by the liquid crystal panel becomes a light having a second polarization if an external electric field is applied thereto, the light having a second polarization is then reflected by the polarizing beam splitter and is emitted along a direction that is orthogonal to the incident light, various modules passing various wavelength ranges are connected one by one, an external electric field is sequentially applied to the liquid crystal panel of each module, so that various wavelength ranges of lights having a first polarization is turned to lights having a second polarization and are sequentially emitted along the direction orthogonal to the incident light.

With respect to claim 1 of the present invention, an external electric field is **sequentially** applied to the liquid crystal panel of each module, so that various wavelength ranges of lights having a first polarization is turned to lights having a second polarization and are **sequentially** emitted along the direction orthogonal to the incident light. It is supported in the specification that the present invention is actually a color separating device that generates red, green and blue light to **sequentially** illuminate a single-pixel reflective FLC panel for full color image, wherein the FLC panel is **time-sequentially-controlled.**

In BUTTERWORTH, however, video signal is applied to the modulators 12 to generate red, green and blue images **simultaneously** for projection of full color image. Furthermore, BUTTERWORTH uses

the spatial light modulator 12 divided into two-dimensional array of picture elements (pixels) to generated red, green and blue images simultaneously. As opposed to BUTTERWORTH, the present invention generates only red, green or blue light **sequentially** by three refractive liquid crystal panels without a plurality of picture elements (pixels).

Moreover, with respect to DULTZ et al. and BRYARS, DULTZ et al. discloses an arrangement and method to control the intensity of unpolarized light, and BRYARS discloses a system for improving the contrast ratio in reflective imaging system utilizing color splitters. However, the color separating device of the present invention that generates red, green and blue light to **sequentially** illuminate a single-pixel time-sequentially-controlled FLC panel for full color image is not disclosed in BUTTERWORTH, DULTZ et al. or BRYAR.

As mentioned above, it is therefore respectfully submitted that BUTTERWORTH does not teach, nor would it have been obvious in view of DULTZ et al. or further in view of BRYARS to use an external electric field **sequentially** applied to the liquid crystal panel of each module, so that various wavelength ranges of lights having a first polarization is turned to lights having a second polarization and are **sequentially** emitted along the direction

orthogonal to the incident light as disclosed in claim 1 of the present invention.

**Rejection under 35 U.S.C. 103 - Claims 4-18**

Claim 4 recites:

A fast time-sequential color-separating device including:

a prism module for separating an incident light into various wavelength ranges of light beams which are emitted from various prisms of the prism module;

a plurality of ferroelectric liquid crystal panels, respectively placed on emerging surfaces of the various wavelength ranges of light beams, to reflect the various wavelength ranges of light beams to the prism module; and

a power supply, respectively connected to the plurality of ferroelectric liquid crystal panels, for fast-switching the liquid crystal panels, respectively, to sequentially emit the various wavelength ranges of light beams from the prism module.

Claim 10 recites:

A fast time-sequential color-separating liquid crystal projector including:

a prism module that separates an incident light into various wavelength ranges of light beams which are emitted from various prisms of the prism module;

a plurality of ferroelectric liquid crystal panels, respectively placed on emerging surfaces of the various wavelength ranges of light beams, to reflect the various wavelength ranges of light beams to the prism module; and

a power supply, respectively connected to the plurality of ferroelectric liquid crystal panels, fast-switching the liquid crystal panels, respectively, to sequentially emit the various wavelength ranges of light beams from the prism module;

a display module that receives and modulates the various wavelength ranges of light beams sequentially emitted from the prism module and then projects modulated light beams.

It is respectfully submitted that ARITAKE et al. discloses a reflective projector, and not actually a color separating mechanism as is disclosed in the present invention. With respect to the present invention, the power supply for **fast-switching** the liquid crystal panels, respectively, to **sequentially** emit the various wavelength ranges of light beams from the prism module as claimed in claim 4 and 10 has never been disclosed in BUTTERWORTH, DULTZ, BRYARS or ARITAKE. Moreover, the display module that receives and modulates the various wavelength ranges of light beams **sequentially** emitted from the prism module as claimed in claim 10 of the present application has also never been disclosed in the references utilized by the Examiner.

As mentioned above, BUTTERWORTH does not teach, nor would it have been obvious in view of DULTZ et al. and further in view of BRYARS or ARITAKE et. al to use the power supply for **fast-switching** the liquid crystal panels, respectively, to **sequentially** emit the various wavelength ranges of light beams from the prism module.

In view of the foregoing remarks, it is respectfully submitted that the claims of the present application are neither taught nor suggested by the prior art utilized by the Examiner. Accordingly, reconsideration and withdrawal of the 35 USC 103 rejections are respectfully requested.

Favorable reconsideration and an early Notice of Allowance are earnestly solicited.

In the event that any outstanding matters remain in this application, the Examiner is invited to contact the undersigned at (703) 205-8000 in the Washington, D.C. area.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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